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Experimental Measurements of X-Ray Driven Plasma Ablation From Solid Density Silicon Targets J W D HALLIDAY, S V LEBEDEV, S N BLAND, L G SUTTLE, D R RUSSELL, V VALENZUELA VILLASECA, S MERLINI, A J CRILLY, J P CHITTENDEN, S J ROSE, Imperial College London, R C MANCINI, University of Nevada, Reno — In this poster we present preliminary observations of fast plasma outflows which are generated when prompt X-Ray bursts impinge upon silicon targets. The X-Ray bursts are produced by the implosion of wire array Z-Pinches on the MAGPIE pulsed power facility (1.4 MA peak-current, 240 ns rise-time). The X-Rays emitted by the arrays have spectra which are dominated by continua (color-temperature $\sim$ 150 eV), and persist for long timescales ($\sim$ 30 ns). The plasma outflows are diagnosed with a state of the art suite of spatially and temporally resolved diagnostics including interferometry, optical Thomson scattering, and fast frame optical self-emission imaging. They are observed to have a uniform structure, and a characteristic velocity . The plasmas expand into strong magnetic fields ($B \sim 10$ T), generated by the pulsed-power drive. The well-defined spatial structure of the plasma outflows mean that the setup represents a promising testbed for radiation-hydrodynamics problems. The experiments could also be tuned to facilitate the study of extended MHD phenomena, particularly the Nernst effect.

Jack Halliday
Imperial College London

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